Log Event A

Borehole # 10-00-04

Borehole Information

Farm : A	**Tank :** A	**Site Number :** 299-E25-58
N-Coord : 41,160	**W-Coord :** 47,540	**TOC Elevation :** 688.02
Water Level, ft :	**Date Drilled :** 6/30/1955	

Casing Record

Type : Steel-welded	Thickness : 0.313	ID, in. : 8
Top Depth, ft. : 0	Bottom Depth, ft. : 151	

Borehole Notes:

Borehole 10-00-04 was drilled in June 1955 to a depth of 151 ft with 8-in. casing. The driller's log does not indicate the diameter of the casing used; however, Chamness and Merz (1993) identify the casing diameter as 8 in. Neither the driller's log nor Chamness and Merz (1993) indicate that the borehole was perforated or grouted. The thickness of the borehole casing is assumed to be 0.31 in., on the basis of the published thickness for schedule-40, 8-in. casing.

The top of the borehole casing, which is the zero reference for the SGLS, is approximately even with the ground surface.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 10/1996	**Calibration Reference :** GJO-HAN-13	**Logging Procedure :** P-GJPO-1783

Logging Information

Log Run Number : 1	**Log Run Date :** 10/16/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 27.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 10/17/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 146.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 59.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 3	**Log Run Date :** 10/18/1996	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 60.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 26.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole 10-00-04

Log Event A

Logging Operation Notes:

This borehole was logged in three log runs. The total logging depth achieved by the SGLS was 146.5 ft.

Analysis Information

Analyst : D.L. Parker

Data Processing Reference : MAC-VZCP 1.7.9 Analysis Date : 03/20/1998

Analysis Notes :

The pre-survey and post-survey field verification for the logging run met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from the accepted calibration spectrum that most closely matched the field data were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

A casing correction factor for 0.33-in.-thick steel casing was applied to the concentration data during the analysis process because it most closely matched the reported casing thickness of 0.31 in.

Shape factor analysis was applied to the SGLS data and provided insights into the distribution of Cs-137 contamination and into the nature of zones of elevated total count gamma-ray activity not attributable to gamma-emitting radionuclides.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Results/Interpretations:

The only man-made radionuclide detected in this borehole was Cs-137. Cs-137 contamination was detected almost continuously from the ground surface to 3.5 ft, at a depth of 133 ft, and at the bottom of the logged interval (146.5 ft).

The plot of naturally occurring radionuclides shows the KUT concentrations are elevated from 1.5 to 15 ft. KUT concentrations decrease again at a depth of about 60 ft and then increase at a depth of about 118 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank A-103.